

## Cross-Connection Prevention and Backflow Prevention Devices

### What is a Cross-Connection?

A cross connection is defined as any direct connection between the public water supply and a non-potable water source or contaminant (potable water is fit for consumption, regulated, and regularly tested for safety whereas non-potable water is not). For example, take the seemingly innocent garden hose. When the hose is attached to a chemical sprayer or submerged in a swimming pool, a physical connection is then established between the public water supply and a potentially hazardous source – in this case lawn or pool chemicals.

### What makes the cross-connection a potential hazard?

The answer is hydraulics. A cross-connection can introduce contaminants from a non-potable source (such as the chemical sprayer or swimming pool mentioned above) into the public water supply by either back siphonage or backflow. Back siphonage occurs when there is a sudden surge in water use - usually due to hydrant flow, main break, etc. resulting in a reversal of normal flow downstream due to negative pressure (think of how a straw works to sip a drink). Backpressure – and resulting reversal of flow - can occur when downstream pressure exceeds the supply pressure. Regardless of the means, reversal of water flow can introduce contaminants into the public water supply if there is a physical connection to a non-potable source.

### Does this really happen?

There have been instances (not in Foxborough thankfully!) where contaminants such as pesticides, caustics, boiler chemicals, and even blood have been introduced into a public water supply due to a lack of proper cross connection protection. Recently, hydroseeding chemicals were introduced into the Somerset public water supply after a company illegally connected to a fire hydrant. The pressure in the hydroseeding truck tank exceeded that of the public supply (backpressure) causing the material to flow into the main. Fortunately, no one became sick.

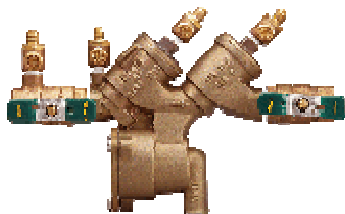
### What does the Foxborough Water Department do about cross-connections?

The Foxborough Water Department maintains a robust cross-connection control program as required by the MassDEP. This program consists of surveying all non-residential facilities serviced by the Department for cross-connections, regular inspection of all installed backflow prevention devices, and educational outreach to customers regarding the importance of cross-connection elimination and protection. Additionally, the Department requires that all facilities served by town water are equipped with the appropriate backflow prevention device where any cross-connections exist.

There are different types of devices to be used based on the degree of hazard present. Some devices are testable – whereas others are not.

### Type of Testable Backflow Prevention Devices:

Reduced Pressure Zone Backflow Device (RPZ). This type of device utilizes two check valves and a relief valve, and is designed for high-hazard uses.



Double Check Valve (DC): This type of device utilizes two check valves, but no relief valve, and is designed for low hazard uses such as for a fire sprinkler line.



Pressure Vacuum Breaker: This type of device utilizes one check valve, and is typically used in irrigation systems.

Air Gap. This is not a device, but a physical separation (of twice the diameter of the supply pipe and never less than 1 inch) between the potable water supply and the non-potable supply. Although not strictly a device, it is measurable. The air gap is extremely effective but limited to uses where downstream system pressure is not required.



#### **Type of Non-Testable Backflow Prevention Devices:**

Hose Bibb Vacuum Breaker: This is a small, inexpensive device available at most hardware stores that can be easily attached to your outside tap before the garden hose. It's used to prevent back siphonage, and is a simple way to protect garden hose cross-connections.



#### **What can Customers do?**

Provide Water Department personnel access to your facility during regular business hours (when requested) to perform required cross-connection surveys and backflow prevention device inspections (normally, surveys and inspections of residences are only needed if there is a fire sprinkler system installed).

Comply with Massachusetts Plumbing Codes to ensure all cross-connections are protected with the appropriate device (a licensed plumber should be able to provide assistance). However, if you have any questions do not hesitate to contact the Water Department at 508-543-1209.

A simple and inexpensive way for residential customers to protect against back siphonage from their garden hose is to install the hose bibb vacuum breaker described above.